

# **The Syntax-Prosody Interface and Sentential Complementation in Hungarian**

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# The Syntax-Prosody Interface and Sentential Complementation in Hungarian

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# 0 Research objectives

Using sentential embedding constructions in Hungarian as a test case:

- Show that the following factors operate independently:
  - .. Factivity
  - .. Givenness/novelty of information
  - .. Contrastive focusing
  - .. Syntactic structure
  
- Provide evidence in favor/against competing syntactic analyses of sentential embedding constructions
  
- Show how givenness, focusing and syntactic structure interact in determining prosodic patterns

# 1.1 Syntactic complexity in sentential embedding- 1

Kiparsky & Kiparsky 1971:

- **Semantics:** factive predicates presuppose the truth of their complement; non-factives do not
  
- (1) #John resents [that the Earth is flat]
- (2) John believes [that the Earth is flat]
- (3) (a) **Factives:** regret, resent, hate, comprehend, forget, make clear, like...  
(b) **Non-factives:** believe, claim, say, assert, conjecture...
  
- First to posit a syntactic difference based on factivity
- Canonized view: ‘factivity’ or ‘presupposition’ is active in syntax because it correlates with semantic (>syntactic) complexity

# 1.1 Syntactic complexity in sentential embedding - 2

## Well-known syntactic and/or semantic contrasts:

- **'Factive islands'** (cf. Szabolcsi&Zwarts 1993 a.o.):  
(4) How<sub>i</sub> do you think/\*resent that the mechanic fixed the car t<sub>i</sub>?
- **Long-distance NPI-licensing**  
(5) John doesn't think/\*resent that the car's worth [anything].
- **Movement in the complement clause** (McCloskey 2005; Irish English)  
(6) John wonders/\*discovered how did the robbers get into the building.
- **DP (or 'it') complements**  
(7) John \*thinks/resents the fact that .../it that .../what you did.
- **Prosodic prominence** (Kallulli 2006):  
(8) a. John thinks that we are going home.  
b. John resents that we are going home.

# 1.1 Syntactic complexity in sentential embedding - 3

## Syntactic analyses:

- (I) Kiparsky&Kiparsky 1970; Kallulli 2006, forthcoming:  
Factive embedded clauses are syntactically more complex
- (II) McCloskey 2005; de Cuba 2006, 2007; Haegeman 2006, 2008; de Cuba&Ürögdi 2001, forthcoming; Bentzen et al 2007:  
Factive complement clauses are (somehow) reduced.

**We assume the following basic structures** (to be explained below):

- (9) Simple clause:           V                           [CP]
- Complex clause:       V           [cP       [CP]]

➤ What is the factor that decides between these two clause types?

## 1.2 Factivity, givenness and referentiality - 1

**Three** (in our opinion, mis-)conceptions in the literature:

(a) *'Factivity is more complex (semantically, and therefore syntactically) than non-factivity due to the added element of presupposition.'*

We do not take up this point here; refer to the authors cited in (II) above.

(b) *'Factivity corresponds (this way or that) to syntactic structure.'*

The problem with this thesis is recognized by various authors (see below) but only as something that needs fine-tuning, not as a conceptual problem.

(c) *'Syntactic (simple vs complex), semantic (factive vs non-factive), pragmatic (given vs new), and prosodic (de-accented vs prominent) effects should align on two sides of a single dividing line since they correlate directly.'*

We hope to provide evidence that these factors operate independently.

## 1.2 Factivity, givenness and referentiality - 2

### **Factivity and novelty of information:**

- factive embedded clauses are presupposed to be true, and *often* given
- non-factive embedded clauses are *often* new info introduced to the context
- Hegarty 1992: some effects previously associated with factivity do not obtain if complement is new – they correspond to givenness, not to factivity

- (10) I was talking to our agents in Russia yesterday, and
- (a) they noticed that Max went to Moscow last week. (no 'it' > novel)
- (b) they noticed it that Max went to Moscow last week. ('it' > familiar)

- Biberauer 2002: embedded V2 in Afrikaans correlates with informational salience (cf. also Bentzen et al. 2007 “main assertion”; de Cuba 2006: “novel-complement-taking” vs. “familiar-complement-taking” predicates)

## 1.2 Factivity, givenness and referentiality - 3

### **Factivity and novelty of information – no necessary correlation:**

Actually, factivity/non-factivity and givenness/novelty operate independently:

- factive verbs can take a new complement (the presupposition is then accommodated), and still behave like factives syntactically as well

(11) A: So, how do you look back on your vacation in London?

B: Well, I certainly don't regret that I met my ex-boyfriend/\*anyone.

A: Did you really? I had no idea you two were still in touch...

(12) A: Why is Peter grinning from ear to ear? Is he happy that he won?

B: Oh, no. He's happy that his best friend is coming for a visit.

- non-factive V can take a given complement without presupposition:

(13) A: Did Mary claim that John is lazy, or that John is dishonest?

B: She claimed that John is lazy, but I totally don't agree with her.

**Hypothesis:** No one-to-one mapping between givenness/novelty and factivity.

## 1.2 Factivity, givenness and referentiality - 4

### **Factivity and prosodic prominence:**

- typically, in a neutral factive construction the main V has highest prominence, while in a neutral non-factive construction it is the embedded clause:

- (14) (a) John resents that Mary is coming tomorrow.  
(b) John thinks that Mary is coming tomorrow.

Kallulli 2006, forthcoming: Claims that prosodic prominence on a main verb “induces” factivity (15a) – but this stems from the confusion of “referentiality” and “presupposition” (see (15b)):

- (15) (a) I didn't see John leave my party, but then he called me from his home phone. Now it was obvious. I believed that John left. (Kallulli)  
(b) John was such a horrible boyfriend, and yet I believed that he would marry me. What an idiot I was! (our example)

## 1.2 Factivity, givenness and referentiality - 5

### **Factivity and prosodic prominence – no necessary correlation:**

Contra Kallulli's observations: this prominence relation is not obligatory (at least in one direction, cf. (15b above)), and it does not correlate with novelty of information (at least in one direction, see (16) below):

(16) Q: Why is John so sad and angry today?

A: He resents that Mary is coming tomorrow.

**Hypothesis:** Prosodic prominence does not correlate directly with factivity (see 15b) or with givenness/novelty of information (see (16)).

**Goal:** Since we assume (see below) that prosody is mapped from syntax, we need to identify the syntactic reason behind these prominence relations.

# 1.3 Our syntactic and semantic assumptions

(based on de Cuba & Ürögdi, forthcoming)

**The two types of syntactic structures in (9) are defined as follows:**

**[V [CP]]:** **CP** is a referential entity denoting a proposition without illocutionary force (a sentence radical in the sense of Krifka 1999; McCloskey 2005) about which the complex sentence makes an assertion. When the complement clause is a **CP**, the sentence's information focus is the matrix predicate (in a neutral context) or some higher operator (focus, negation).

**[V [cP [CP]]]:** **cP** is a non-referential semantic object denoting a speech act, which adds a new proposition or an open question to the context. A **cP** properly contains a **CP** both syntactically and semantically. When a verb takes a **cP** as its complement, the information focus of the complex sentence is the **cP**. As such, **cP** is not compatible with a factive main verb.

## 1.4 Object clauses in Hungarian: Basic patterns – 1

The structures in (9) yield the following possible structures:

(17) cP complement: no-contrast non-factive construction

[TopP*	[TP	XP	V	...	[VP	[cP	[CP	]]]
Subject		az <sub>t</sub> <sub>i</sub>	non-FV			t <sub>i</sub>		
Zalán		azt	mondta,				hogy...	
Zalán		Dem	said				Comp	
...	Lóri	elveszi		Nóra-t			feleség-ül.	
	Lóri	Prt-takes		Nóra-Acc			wife-as	

‘Zalán said that Lóri will marry Nóra.’

- **Expectation:** matrix-like intonation on the embedded CP; relatively high prominence on the embedded clause

## 1.4 Object clauses in Hungarian: Basic patterns – 2

### (18) CP complement: no-contrast construction, both verb types

[TopP*	[TP	V	...	[VP	[CP	]]]
Subject		FV/non-FV			C	...
<i>János</i>		<b><i>sajnálja/állította,</i></b>			<i>hogy ...</i>	
<i>János</i>		<i>regrets/claimed</i>			<i>Comp</i>	
...	<i>Noémi</i>	<i>megnyerte</i>	<i>a nagydíjat</i>	<i>a lovin.</i>		
...	<i>Noémi</i>	<i>won</i>	<i>the prize-Acc</i>	<i>the races-at</i>		

‘János resents/claimed that Noémi won the grand prize at the races.’

- **Factors to control:** a) factivity of main V; b) givenness of complement clause, and c) contrastive verb focus
- **Expectation:** no factivity difference; givenness/novelty effect equally in both verb types; visible effect of V-focus compared to no-contrast

## 1.4 Object clauses in Hungarian: Basic patterns – 3

(18) **Contrastive focus on the embedded clause**

[TopP\* [TP XP V ... [VP [CP ]]]

Subject **AZT<sub>i</sub>** **FV/non-FV** **t<sub>i</sub>**

*Zalán AZT bánja/mondta hogy ...*

*Zalán Dem regrets/said Comp*

*... Lóri elveszi Nórá-t feleség-ül.*

*Lóri Prt-takes Nóra-Acc wife-as*

‘Zalán said that Lóri will marry Nóra.’

- **Factors to control:** factivity; givenness of the complement clause
- **Expectation:** potential givenness effect; no factivity contrast

# 1.5 Syntax-prosody mapping - 1

## Basic assumptions

- Crucially, we assume that syntactic differences are mapped onto prosodic differences, since prosody takes syntactic structure as its input.
- Therefore, wherever a particular analysis posits a syntactic contrast, we would expect to see a prosodic difference as well.
- The converse is not necessarily true: Prosodic effects do not result from syntax alone (e.g. pragmatic factors also play a role).

(Selkirk 1984, Nespor & Vogel 1986, Truckenbrodt 1999, Samek-Lodovici 2005, among many others.)

# 1.5 Syntax-prosody mapping - 2

## **Predictions of various approaches for prosody:**

### **A. 'Factivity determines syntactic structure':**

- .. Patterns should crucially contrast for factivity.
- .. We may or may not expect to see the effect of givenness.
- .. If information structure is kept constant, factivity should be visible.

### **B. 'Factivity correlates with givenness/novelty of information, which in turn determines syntactic structure':**

- .. We do not expect to see a givenness effect if factivity is kept constant.
- .. Sentences where the embedded clause is given should show prominence on the verb and should be interpreted as factive.
- .. Sentences with a novel embedded clause should show prosodic prominence of the complement clause and should be non-factive.

## 1.5 Syntax-prosody mapping - 3

### **C. ‘Factivity is lexico-semantic, givenness is pragmatic, syntax is independent of both’:**

.. If givenness is successfully controlled, we do not expect to see a significant factivity contrast.

.. We do (or can) expect both factive and non-factive examples to show givenness effects.

.. We expect novel embedded clauses of the cP type to contrast with novel embedded clauses of the CP type in that the matrix verb should retain prosodic prominence in the latter, despite the novel complement.

.. We may expect cP complements to show matrix-like prosody.

### **Additional factors that we looked at:**

.. Contrast between V-prominent conditions and V-focus

.. Potential effects of givenness in the case of focus on the complement

## 2.1 Experimental design – 1

### Factors we controlled – methods of setting up our contexts:

- 1 Contrastive focus
    - No contrast
    - Contrast on the complement CP
    - Contrast on the matrix V
  - 2 Givenness of the complement CP
    - New
    - **Given**
  - 3 Factivity of the matrix V
    - Non-factive (—)
    - Factive (- - -)
- In addition, non-factive, new, non-contrastive condition may or may not have *azt* (which correlates with cP/CP structure).
- **Total of 13 conditions (3×2×2+1)**

## 2.1 Experimental design – 2

Conditions	F1: Contrast	F2: Givenness	F3: Factivity	<i>“azt”</i>
0Aa	∅	– Given(=New)	– Factive	
0Ac	∅	– Given	– Factive	<i>azt</i>
0Ab	∅	– Given	+ Factive	
0Ba	∅	+ Given	– Factive	
0Bb	∅	+ Given	+ Factive	
1Aa	CP	– Given	– Factive	<i>azt</i>
1Ab	CP	– Given	+ Factive	<i>azt</i>
1Ba	CP	+ Given	– Factive	<i>azt</i>
1Bb	CP	+ Given	+ Factive	<i>azt</i>
2Aa	V	– Given	– Factive	
2Ab	V	– Given	+ Factive	
2Ba	V	+ Given	– Factive	
2Bb	V	+ Given	+ Factive	

## 2.1 Experimental design – 3

### Sample Stimuli

➤ **Factor 1 – Contrastive focus:**

- The complement or the matrix V of the target is contrasted with those in the context. The conditions also contrasted for givenness of the complement clause.

**Example: Contrast on complement CP, new complement, nonfactive V:**

C: **Úgy hallottam, mintha Józsi azt állította volna, hogy Nórát elveszi egy milliomos. De rosszul hallottam, amit mondott.**

‘I heard Józsi claim that a millionaire would marry Nóra. But I heard wrong.’

T: **Józsi azt állította, hogy Noémi megnyerte a nagydíjat a lovin.**

‘What Józsi claimed was that Noémi had won the grand prize at the horse races.’

**Example: Contrast on V, given complement, nonfactive V:**

A: **Józsi bebizonyította, hogy Noémi megnyerte a nagydíjat a lovin?**

‘Did Józsi prove that Noémi had won the grand prize at the horse races?’

B: **Nem. Józsi állította ugyan, hogy Noémi megnyerte a nagydíjat a lovin, de nem bizonyította be.**

‘No. Józsi CLAIMED that Noémi won the grand price at the horse races but didn’t prove it.’

## 2.1 Experimental design – 4 Sample Stimuli

### ➤ **Factor 2 – Givenness:**

- **New:** All parts of the complement CP are new to the context.
- **Given:** Complement CP is mentioned in the context in the same form, and repeated in the target sentence.

### **Example: New complement clause, no contrast, non-factive V:**

**C: Az osztálytársaim érezték, hogy valami szerencsés dolog történt, de nem tudák, mi lehet az.**

‘My classmates sensed that something fortunate had happened but didn’t know what.’

**T: Józsi állította, hogy Noémi megnyerte a nagydíjat a lovin.**

‘Józsi claimed that Noémi had won the grand prize at the horse races.’

### **Example: Given complement clause, no contrast, non-factive V:**

**A: Képzeld, most hallom Zolitól, hogy Lóri elveszi Nórát feleségül.**

‘Guess what. I just heard from Zoli that Lóri would marry Nóra.’

**B: Én már tegnap tudtam. Zoli mondta, hogy Lóri elveszi Nórát feleségül.**

‘I have known since yesterday. Józsi said that Lóri would marry Nóra.’

## 2.1 Experimental design – 5

### Sample Stimuli

➤ **Factivity:**

- We contrasted factive and non-factive verbs in the same type of context while controlling for givenness to see if we see relative prominence relations between the V and the complement reverse based on factivity or not. (The Kallulli-style account would predict that non-factive complements will always be prominent.)

**Example: Factive verb, new complement clause, no contrast:**

**A: Mostanában a családi ebédeken elég nyomott a hangulat. Tudod, miért?**

‘These days the atmosphere at family lunches is quite bad. Do you know why?’

**B: Aha. Zoli bánja, hogy Lóri elveszi Nóráat feleségül.**

‘Yeah. Zoli resents that Lóri is going to marry Nóra.’

**Example: Non-factive verb, new complement clause, no contrast:**

**A: Hallottál mostanában valami hírt a régi osztálytársainkról?**

‘Have you heard any news of our old classmates recently?’

**B: Igen, most hogy említet, hallottam. Zoli mondta, hogy Lóri elveszi Nóráat feleségül.**

‘Now that you mention it, I have. Zoli said that Lóri is going to marry Nóra.’

# 2.1 Experimental design – 6

## Sample Stimuli

### ➤ **cP vs. CP contrast:**

- Non-factive verbs were tested in two different no-contrast constructions (with or without ‘azt’, which we take to signify the syntactic difference between cP –a speech act– and CP –a referential complement clause). We wanted to confirm that in the latter case the main V is still prominent.

### **Example: cP complement (‘azt’), no contrast, new complement clause:**

**A: Hallottál mostanában valami hírt a régi osztálytársainkról?**

‘Have you heard any news of our old classmates recently?’

**B: Most hogy említéd, hallottam. Zoli azt mondta, hogy Lóri elveszi Nórát feleségül.**

‘Now that you mention it, I have. Zoli said that Lóri is going to marry Nóra.’

### **Example: CP complement (no ‘azt’), no contrast, new complement clause:**

**A: Hallottál mostanában valami hírt a régi osztálytársainkról?**

‘Have you heard any news of our old classmates recently?’

**B: Most hogy említéd, hallottam. Zoli mondta, hogy Lóri elveszi Nórát feleségül.**

‘Now that you mention it, I have. Zoli said that Lóri is going to marry Nóra.’

## 2.1 Experimental design – 7

### Other settings

- 6 speakers (3 male; 3 female)
- 4 sentences per condition, recorded 3 times (using 3 different pseudo-randomized orders of the entire stimuli)
- 5 or 6 words measured for F0-Max, Min (MSub, azt, MVerb, C, ESub, EVerb)
- Normalization

## 2.2 Experimental results – 1

### 1. Contrastive focus effects

- Contrastive CPs and Vs show clear prosodic effects.
- These effects mask any differences of givenness and factivity.

### 2. Prosodic difference between cP vs CP

- In the non-contrastive, new, non-factive contexts (with or without *azt*), a more matrix-like prosody for complement CP is found with *azt*. Higher prominence is on the matrix V in the CP case, and on the embedded clause in the cP case.

### 3. No Factivity-Givenness correlation

- Givenness effect can be detected with both non-factive and factive verbs, with the embedded clause clearly showing higher peaks in the non-given conditions.

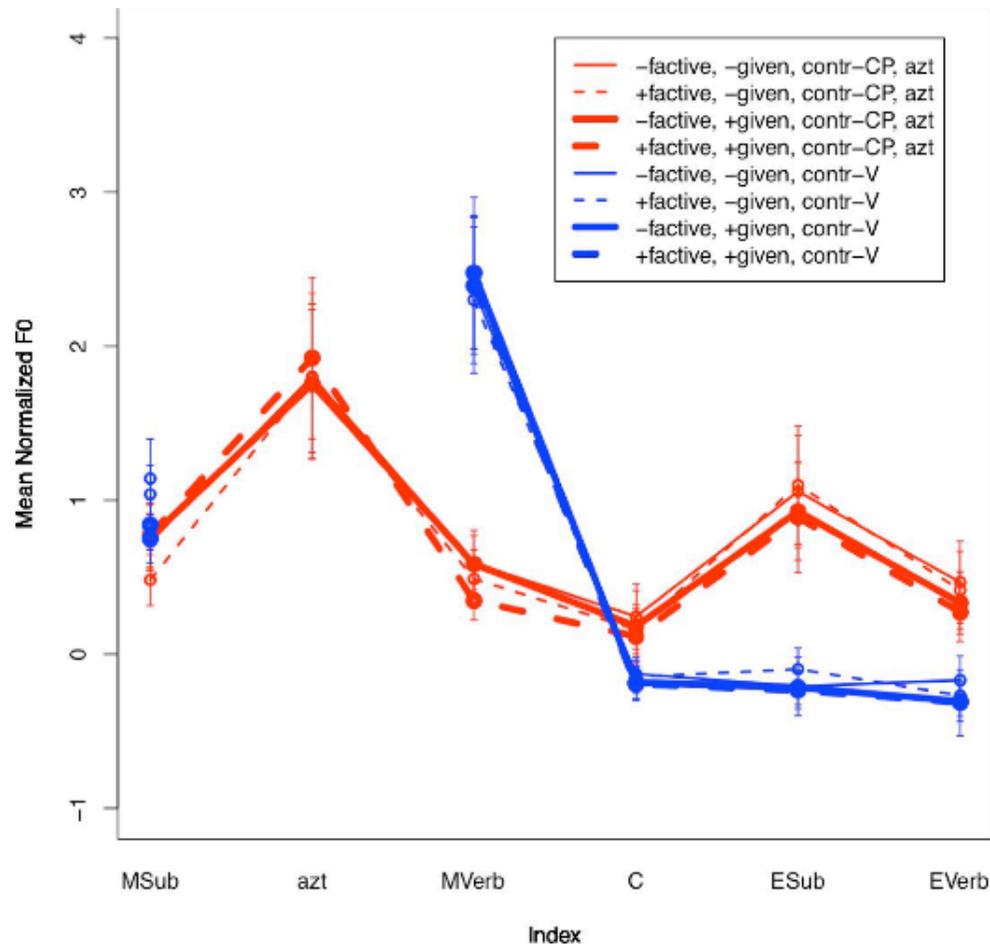


### No significant factivity difference

> While both factive and non-factive conditions showed a clear effect of givenness of the complement, the basic contour and relative prominence relations were the same regardless of factivity if givenness was held constant. Crucially, the matrix verb remained prominent in the non-factive and in the novel complement conditions.

## 2.2 Experimental results – 2

### Finding 1: Contrast



#### CP-contrast conditions

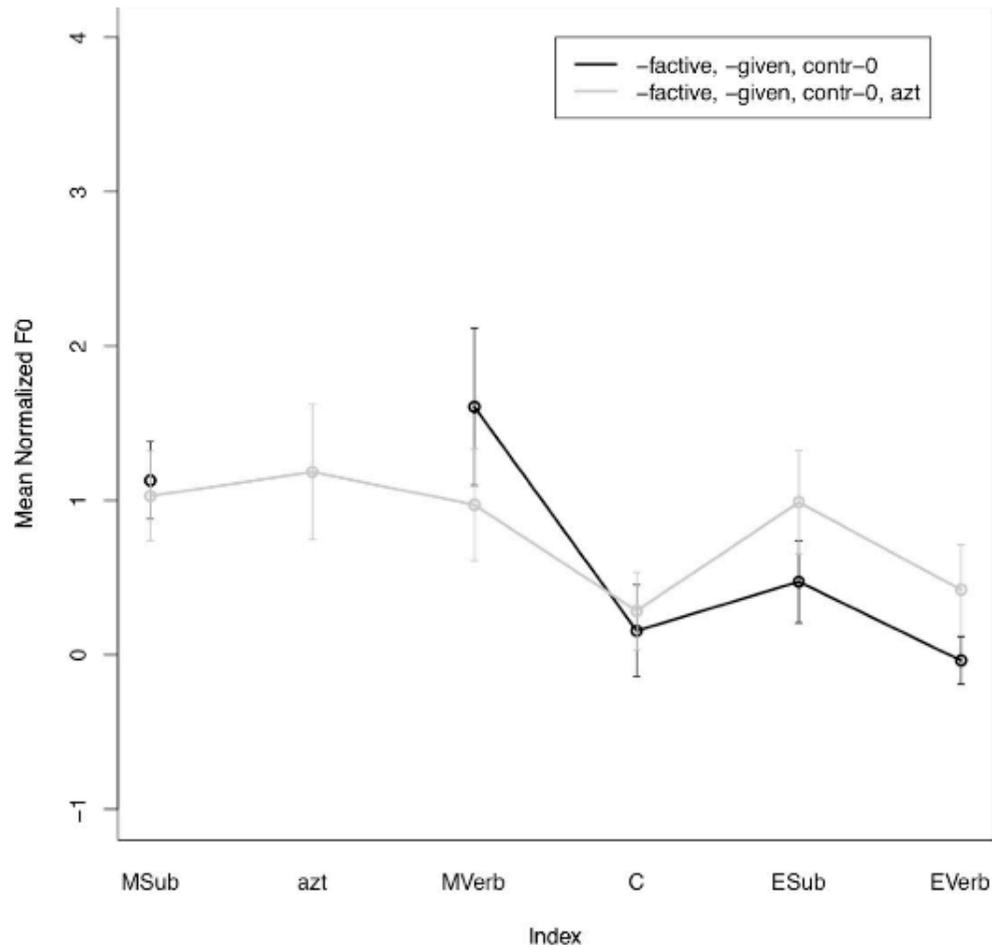
- No factivity effect
- No givenness effect

#### V-contrast conditions

- No factivity effect
- No givenness effect

## 2.2 Experimental results – 3

### Finding 2: cP vs CP



Non-factive, New, No-contrast

With *azt* (gray line):

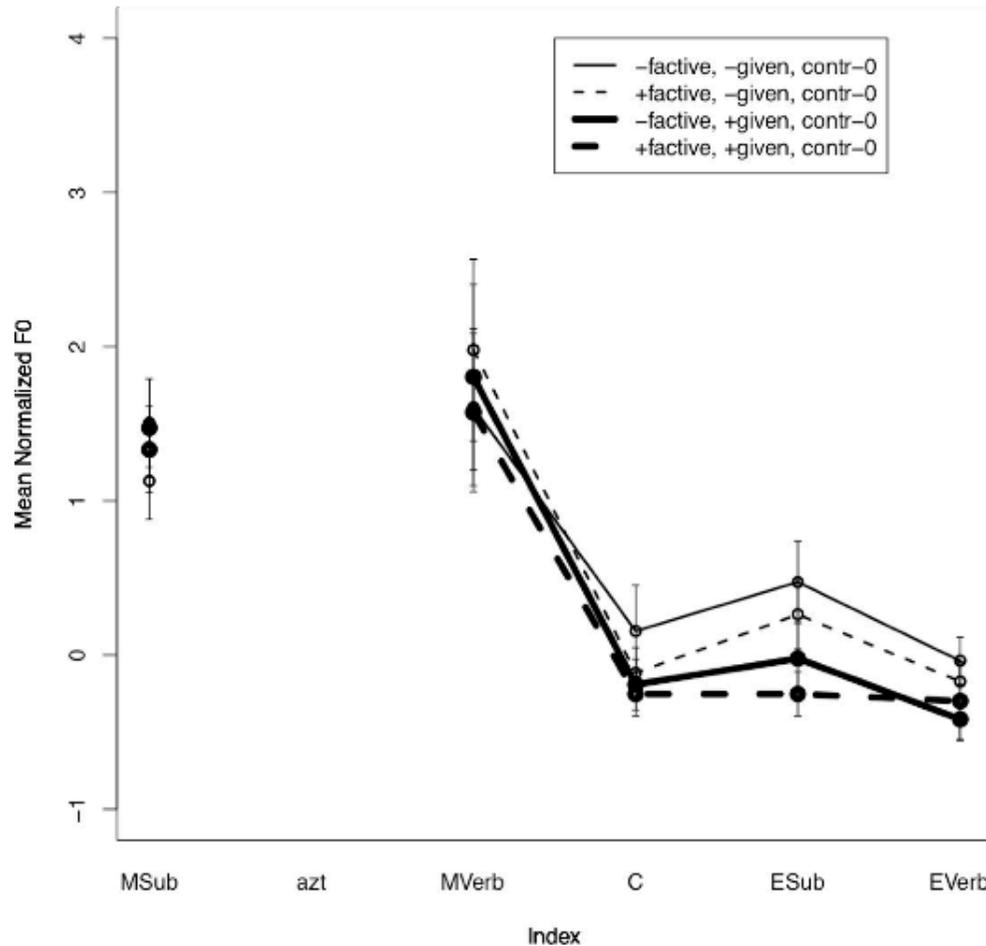
- Complement CP shows high F0-Max

No *azt* (black line):

- Higher F0-Max on the matrix V
- Lower F0-Max on the complement CP

## 2.2 Experimental results – 4

### Finding 3: Givenness & Factivity



In the no contrast conditions, givenness effect appears both with non-factive and factive verbs.

Non-factive (solid line):

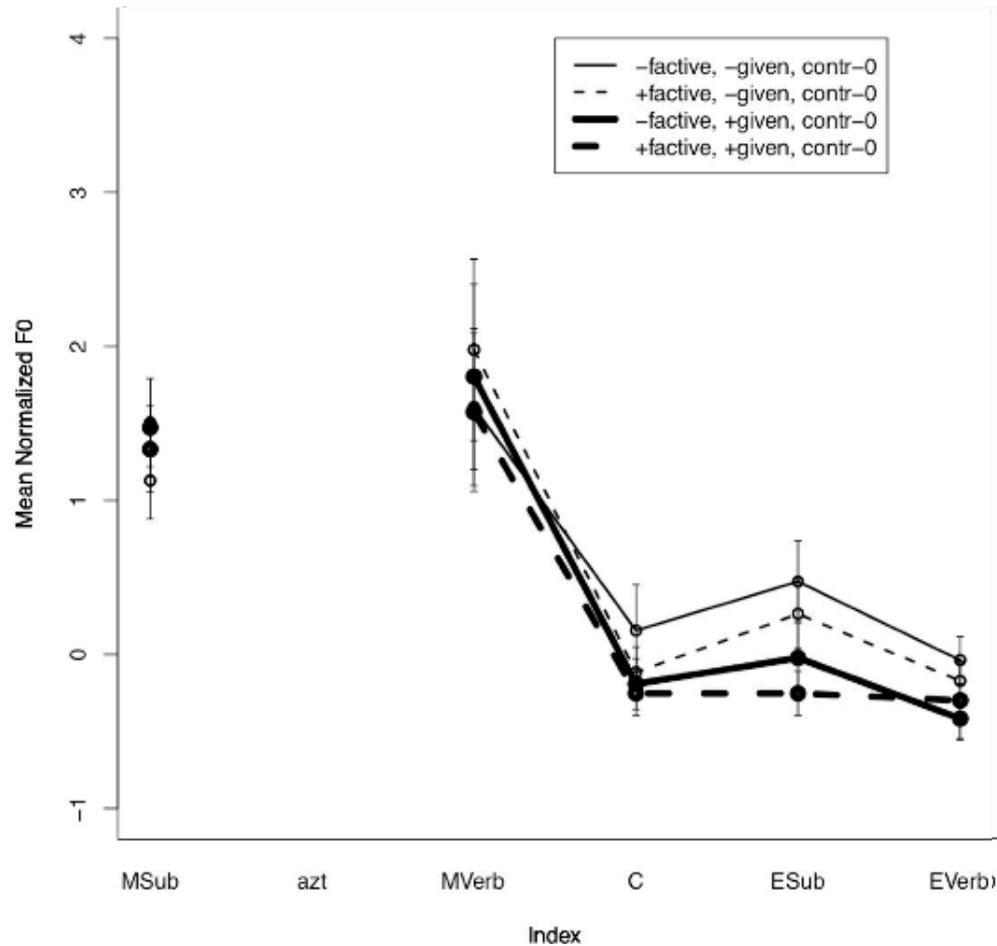
- New (thin line) complement CP shows a higher F0-Max than Given (thick line).

Factive (dashed line):

- New (thin line) complement CP shows a higher F0-Max than Given (thick line).

## 2.2 Experimental results – 5

### Finding 3: Givenness & Factivity



No significant factivity effect:

New (thin lines)

- Not significant  
( $t(135.546) = 1.2038, p > 0.1$ )

Given (thick lines)

- Not significant  
( $t(142) = 1.6852, p > 0.05$ )

## 2.2 Experimental results – 6

### Summary & Discussion

1. Prosodic difference between cP vs CP
  - Prosodic evidence for the syntactic difference between the two types of complement CP structures. This difference does *not* correspond to factivity.
  
2. Givenness effects are independent of factivity
  - Factivity is not directly correlated with givenness since both factive and non-factive conditions show givenness effects.
  - Givenness should be treated as a pragmatic effect. These two factors operate independently.
  
3. No significant Factivity effects
  - Though some differences were found between non-factive and factive complements (factive embedded clauses tended to be slightly less prominent), effects were less consistent or significant than givenness effects.
  - Crucially, the basic contour of the no-contrast conditions was the same regardless of factivity when givenness was held constant: main prominence on matrix verb. This is predicted if all of these feature a CP complement.

# 3 Summary

1. Sentential embedding structures: Syntactic
    - cP vs CP
  2. Givenness: Pragmatic
    - No direct syntactic correspondence, and not related to factivity (semantics).
  3. Factivity: Lexico-semantic
    - No direct syntactic or pragmatic correspondence.
- 
- Our phonetic experiment:
    - Prosodic difference between cP vs CP
    - Givenness effect is independent of factivity
    - No significant factivity effect

# Thank you very much!

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